



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,882	02/08/2006	Matthias Hoffmann	56817M521	2362
23363 7590 02/09/2009 CHRISTIE, PARKER & HALE, LLP PO BOX 7068 PASADENA, CA 91109-7068				
EXAMINER				
DIAZ, THOMAS C				
ART UNIT		PAPER NUMBER		
3656				
MAIL DATE		DELIVERY MODE		
02/09/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/567,882

**Applicant(s)**

HOFFMANN ET AL.

**Examiner**

THOMAS DIAZ

**Art Unit**

3656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32, 34-37 and 82-87 is/are pending in the application.
- 4a) Of the above claim(s) 38-81 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32, 34-37 and 82-87 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-87 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Staus of Claims***

This office action is in response to the reply filed on 11/05/2008. The examiner appreciates and acknowledges applicant's response.

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "indentation" from claim 28 and, "the threaded spindle" of claim 1 (fig.2, shows a spindle but no details shown), must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claim 2 is objected to because of the following informalities: the claim recites "the external toothing decreases to zero at least one axial". The phrase is incomplete. Perhaps adding the word "towards" after "zero" would clarify the phrase. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 86-87 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 86 recites the limitation "the elastic elements". There is insufficient antecedent basis for this limitation in the claim.

Claim 87 is dependent on a cancelled claim and recites "the reinforcement ring" which lacks antecedent basis.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-10, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kraus (USP 2201670).

Regarding claims 1-10, 12, Kraus discloses a similar device comprising:

- a spindle nut (fig.1, 15) defining an axis and interacting on one side with a threaded spindle (fig.1, 16) and comprising on the other side in an external surface an external toothing (fig.1, 22) through which the spindle nut engages with a further gearing element (fig.1, 14);
- wherein the external toothing of the spindle nut is formed through radially inwardly pointing indentations (see fig.1, 22) in the external surface of the spindle nut and wherein tooth depth diminishes towards at least one axial end of the spindle nut (fig.5, 22; the tooth depth diminishes to both axial ends, the dotted line being to tooth crown).
- the tooth depth of the external toothing decreases to zero at least one axial end of the spindle nut (see fig.5).
- the external toothing of the spindle nut extends in the axial direction only over a part of the axial extension of the outer surface of the spindle nut so that the spindle nut has in the axial direction on the other side of the external toothing

- at least one end section without external toothing (fig.5, at each side of the toothing defined by the dotted line there is a section 23 with no toothing).
- the at least one axial end section of the spindle nut without external toothing is formed substantially as a circular line (see fig.1).
  - the external toothing of the spindle nut is formed by indentations in the external surface of the spindle nut in relation to at least one end section of the spindle nut (fig.1, 22).
  - the spindle nut has in the axial direction on at least one side of the external toothing an end section without external toothing (see fig.1, 23 is the end section).
  - the spindle nut has an external surface in the form of a cylinder sleeve (see fig.1) and that the external toothing is formed by indentations in the external surface whereby the diameter of the at least one end section is larger than or equal to the diameter of the external surface which is provided with indentations (fig.5, the diameter of end section 23 is larger than the dotted lines which represent the external surface of the toothing indentations).
  - the spindle nut in the region of the external toothing does not project in the radial direction beyond the at least one end section (see fig.5).
  - the external toothing is globoid in shape and more particularly has globoid toothing in its axial edge regions (see fig.1, the toothing is globoid since it is rounded towards the edge regions)

- the external toothing has an involute profile in a middle section in the axial direction (see fig.1 or fig.5; the toothing has a circular involute profile in the axial direction represented by the dotted lines).
- The further gearing element comprises a worm gear (fig.1, 14; is a worm gear) and wherein the external toothing of the spindle nut interacts with the worm gear (fig.1).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-8, 12, 13, 15-27, 29-32, 34, 36, 37, 82-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann et al. (WO9951456A1; using USP 7051986 as a translation of the PCT reference for discussing the rejection) in view of Hendrick (USP 2128483).**

***Examiner notes that the exact location of the discussed reference numerals or column and line numbers may not exactly correspond with the exact location in PCT document.***

***Taubmann et al. discloses the following:***

*Regarding claim 1*, Taubmann et al. discloses an adjustable mechanism (see title) comprising a spindle nut (fig.4, 92) interacting on one side with a threaded spindle (fig.1, 5) and interacting with a further gearing element (fig.4, 91).

Taubmann et al. fails to explicitly disclose the external toothing of the spindle nut is formed through radially inwardly pointing indentations in the external surface of the spindle nut and wherein tooth depth diminishes towards at least one axial end of the spindle nut.

Hendrick teaches a spindle nut or worm wheel (fig.5 and fig. 6, element 47 and 51) wherein the external toothing of the spindle nut is formed through radially inwardly pointing indentations in the external surface of the spindle nut and wherein tooth depth diminishes towards at least one axial end of the spindle nut (see fig.5) for the purpose of providing gear teeth with longer bearing surfaces and decreasing backlash between the worm and the spindle nut (page 2, col.1, lines 53-61)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the spindle nut disclosed by Taubmann et al. with the gear teeth taught by Hendrick in order to provide a spindle nut with longer bearing surfaces and decreasing backlash between the worm and the spindle nut (page 2, col.1, lines 53-61).

*Regarding claim 2-8*, Hendrick discloses the external toothing diminishing to zero at both ends of the spindle and the diameter of the end section being larger than or equal to the diameter of the external surfaces provided with indentations.



*Regarding claim 12*, Taubmann et al. discloses the further gearing element is a worm gear (fig.4, 91; see disclosure) and the external teeth of the spindle nut interacts with the worm gear.

*Regarding claim 13*, Taubmann et al. discloses the internal toothing of the spindle nut (fig.18, 92; has internal toothing that would extend greater in the axial direction than the external toothing that would be present at 92'.) associated with the spindle extends over a greater length in the axial direction than the external toothing so that the internal toothing extends axially up into at least one end section.

*Regarding claim 15*, Taubmann et al. discloses that the spindle nut and further gearing element (worm) are mounted in a gearbox housing (fig.5, 7).

*Regarding claim 16*, Taubmann et al. discloses that the gearbox housing is made of housing parts (seen in figure 4 which shows an exploded view of all the components).

*Regarding claim 17*, Taubmann et al. discloses that the housing parts are connected to one another through push-fit connections and are aligned relative to each other along all special directions (seen in figure 5, elements 76 are push fit into recesses provided on 71a and 71b and all the housing parts are aligned).

*Regarding claim 18*, Taubmann et al. discloses the gearbox housing comprising one or two pairs of opposing housing parts (fig. 5, 71a and b and 72a and b are two pairs of housing parts).

*Regarding claim 19*, Taubmann et al. discloses the gearbox housing comprises housing parts which have a U-shaped cross-section (fig.6, 71; a cross-section taken

down the centerline of a vertical axis would yield a U-shape cross-section). It is noted that changing the shape of this housing would be well within the skill in the art.

*Regarding claim 20*, Taubmann et al. discloses the external parts (fig.6, 71) engaging round bearing parts (fig.7, 72) mounted opposite one another to support the spindle nut (fig.5).

*Regarding claim 21*, Taubmann et al. discloses the external housing parts surrounding bearing sections (fig.7, 74 or fig.5, 74a and b).

*Regarding claim 22*, Taubmann et al. discloses that the gearbox housing is comprised of plastics (col.4, lines 64-66; housing parts can be made of plastics).

*Regarding claim 23*, Taubmann et al. discloses bearing points or bearing openings for the spindle nut and further gearing element or worm (fig. 5, generally indicated by 74a and b and 73a and b).

*Regarding claim 24*, Taubmann et al. discloses a bearing collar which protrudes from the axial end sections of the spindle nut (fig.4, see 92 which clearly has bearing collars).

*Regarding claim 25*, Taubmann et al. discloses the end sections further define bearings (fig.4, 92) for supporting the spindle nut whereby the axial and radial bearing is produced through a pair of housing parts of a gearbox housing (see fig.5, the bearing is formed when assembled with housing parts).

*Regarding claim 26, 29, and 30*, Taubmann et al. discloses the gearbox housing has recesses (fig. 5, generally indicated by 74a and b and 73a and b) in the boundary walls for the spindle nut and further gearing element to engage.

*Regarding claim 27*, Taubmann et al. discloses that the recesses are formed through openings in the boundary walls (see same fig.5, 74a and b, 73a and b). The examiner notes that the process of forming these recesses is not given patentable weight.

*Regarding claim 31*, Taubmann et al. discloses that between the gearbox housing and an associated holder (fig.4, 8) of the gearbox housing there is at least one element (fig.4, 10a and b) for acoustic uncoupling (col.3, lines 44-47). It is noted that bearing plates (fig.5 72a and b) could also act as uncoupling elements.

*Regarding claim 32*, Taubmann et al. discloses that the elements (fig.4, 10a and b) are made of one of rubber and plastic (these members are capable of being injected moulded) It is noted that this claim is a product by process in which the element is made by injection moulded and the process is not given patentable weight.

*Regarding claim 34*, Taubmann et al. discloses that the housing parts can be connected to each other through laser welding (col.2, lines 23-26; or col.6, lines 10-13).

*Regarding claim 36*, as discussed above Taubmann et al. discloses these bearing plates and gearbox housing. This is a product by process claim and the process of making these components is immaterial to the patentability of the product.

*Regarding claim 37*, Taubmann et al. discloses a gearbox housing (discussed above) set in a holder of U-shaped cross-section (fig.2, 8) which can be fixed to an associated adjustable part (such as the seat or top rail 3 not shown in figures).

*Regarding claim 82*, Taubmann et al. discloses the spindle nut has in the axial direction on either side of the external toothing an end section without external toothing,

and wherein the end sections (fig.4, 92) serve at the same time as bearings for supporting the spindle nut whereby the axial and radial beating is produced through a pair of housing parts of a gearbox housing.

*Regarding claim 83*, Taubmann et al. discloses the housing parts as housing plates (they name the housing parts, housing plates).

*Regarding claim 84*, Taubmann et al. discloses that the bearing points as described above are in the form of bearing opens (see the same elements as above).

*Regarding claim 85*, Taubmann et al. discloses that the at least one element (fig.4, 10a or b) of claim 31 is in the form of a resilient member since it is made of rubber and plastic and designed to eliminate noise and compensate for tolerances.

*Regarding claim 86*, Taubmann et al. discloses the elastic elements as discussed above which can be made of plastic. As shown in the figure these elements are one piece and would be attached on the gear housing. This is a product by process claim so the process of making the element by injection moulding is not given patentable weight.

*Regarding claim 87*, Taubmann et al. discloses that the reinforcement ring (fig.4, 96) is mounted on the bearing collar as seen in figure 4.

**6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann et al. (WO9951456A1; using USP 7051986 as a translation of the PCT reference for discussing the rejection) in view of Hendrick (USP 2128483), as applied to claim 1 above, and further in view of Moeller, Jr. (USP 4110054).**

*Regarding claim 11*, the combination of Taubmann et al. and Hendrick is silent to the spindle nut being made of plastic.

Moeller, Jr. teaches the use of plastic material for making a gear for the purpose of providing a lighter, anti-rust, gear which would be easier to handle and install as well as less likely to cause injury if dropped (col.4, lines 1-8).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the spindle nut disclosed by Taubmann et al. to be made of plastic as taught by Moeller, Jr. for the purpose of providing a lighter, anti-rust, gear which would be easier to handle and install as well as less likely to cause injury if dropped (col.4, lines 1-8). The spindle nut would still provide the same predictable result of allowing translation of seat or element to be adjusted, regardless of the material of which it is made.

**7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann et al. (WO9951456A1; using USP 7051986 as a translation of the PCT reference for discussing the rejection) in view of Hendrick (USP 2128483), as applied to claim 1 above, and further in view of Hauser, Jr. (USP 4386893).**

*Regarding claim 14*, the combination of Taubmann et al. and Hendrick is silent to the tooth thickness of the internal toothing of the spindle nut interacting with the threaded spindle being greater than the gap between each tooth.

Hauser, Jr. teaches using a tooth thickness that is greater than the gap between the meshing teeth (see fig.1) for the purpose of increasing bearing surface and thus increasing lubrication of a fluid film (see claim 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to change the shape of the internal toothing taught by Taubmann et al. to be thicker than the gap between the internal toothing and the threaded spindle in order to provide the predictable results of increasing the bearing surface. Furthermore, if a lubricant were added to the interface, the bearing would have more lubricating surface.

The examiner notes that although the prior art reference teaches this relationship between the thicknesses of the gear teeth on the external part of the gearing it would yield the same predictable results to apply it to the internal gear teeth of the spindle nut.

**8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann et al. (WO9951456A1; using USP 7051986 as a translation of the PCT reference for discussing the rejection) in view of Hendrick (USP 2128483), as applied to claim 26 above, and further in view of Segal (USP 2313776).**

*Regarding claim 28*, the combination of Taubmann et al. and Hendrick above are silent to the recess being in form of an indentation.

Segal teaches a recess being in the form of an indentation in a boundary wall of a toilet paper holder for the predictable purpose of holding the spindle (fig.3, S).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recess taught by Taubmann et al. to be in the form of an indentation instead of an opening in order to provide the same predictable result of supporting the spindle nut or other gearing element.

**9. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann et al. (WO9951456A1; using USP 7051986 as a translation of the PCT reference for discussing the rejection) in view of Hendrick (USP 2128483), as applied to claim 34 above, and further in view of Muellich (USP 5893959).**

*Regarding claim 35*, Taubmann et al. does disclose the use of laser welding to connect the parts of the housing and laser technology, as discussed above.

However, Taubmann et al. is silent to the external housing parts (fig.4, 71a and b) being transparent and the internal housing parts (fig.4, 72a and b) being non-transparent.

Muellich teaches the use of a transparent housing cover (fig.1, 8) and a non-transparent housing base (fig.1, 7) for allowing a laser beam to shine through the housing cover and create a weld with an inner surface of the housing base.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the housing parts taught by Taubmann et al. by making the external housing parts transparent and the internal housing parts non-

transparent as taught by Muellich for the purpose of allowing the laser beam during laser welding to shine through the housing part and create a weld on the inner contact surfaces between the parts. Examiner notes that this would create a better weld than just welding the outside of these components.

### ***Response to Arguments***

4. Applicant's arguments filed 11/05/2008 have been fully considered but they are partially not persuasive.
5. In response to applicant's argument that Hendrick (USP 2128483) is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Hendrick discloses a gear, in particular a worm wheel (fig.4, 47) which could also be interpreted as a spindle nut since it rotates on a spindle (fig.3, 48). Applicant argues that Hendrick teaches a different gear than Taubmann et al. and thus the references would not be combinable. However, both references are analogous since they both deal with the same type of gear arrangement (i.e. they both are worm wheels which engage worms) and one of ordinary skill in the art would be able to modify the gear teeth accordingly. In addition, in the rejection the examiner is simply teaching the use of a particular external tooth shape as taught by Hendrick and thus no other features taught by Hendrick would necessarily be relevant to the



argument. Furthermore, any type of gearing would arguably qualify as analogous art since it is known to modify the shape of the gear teeth on any type of gearing depending on the arrangement of gears being used and their respective engagements. The rejection is maintained and the examiner would appreciate the applicant to reconsider their position.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS DIAZ whose telephone number is (571)270-5461. The examiner can normally be reached on Monday-Friday 8:30am to 5:30pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/567,882  
Art Unit: 3656

Page 17

/ Thomas Diaz/  
Examiner, Art Unit 3656

/Richard WL Ridley/  
Supervisory Patent Examiner, Art Unit 3656